

January 25, 1963
#136-029

D

Dear Jack:

A copy of the predicted test program schedule and procedure for the Type IIA test continuation is enclosed. As it is not possible to predict the exact success of each portion of the program, the schedule serves to bracket the data deemed necessary to successfully terminate the test series rather than define an exact time requirement.

Every effort will be made to shorten the overall time indicated. If more than one vehicle is available, it would be possible to supplement the field crew to permit parallel tests to be performed over the portions of the program wherein sequential data is not required.

As previously discussed, our equipment is being prepared for air lift to January 29, 1963.

25X1A

A simple thermal adapter looks feasible to permit the 70mm test unit to be operated "hot". Full information on the capabilities of the device will be submitted to you as soon as the Type IIA equipment has gone and conditions return to a somewhat more normal state.

B. L. E.

BLE:LB

Type IIA - Test Program Continuation (PC)

Procedures and nomenclature:

The following references are offered to minimize confusion between test crew and home facilities during performance of the test.

Cold Test: K -15 (true)
 V/H = .035 \pm 18% (.029 to .042)
 Internal Pressure environment = as low as conditions permit (air).

Hot Test: K + 50 (true)
 V/H = .035 \pm 18% (.029 to .042)
 Internal Pressure environment = 1.5 psi or less.

Special Test Unit: 70mm recorder in T-28 2-axis stabilized mount. Oscillograph and magnetic tape data recording capabilities. Entire unit isolated from vehicle.

Configuration: Type IIA prototype panoramic recording unit.

Vehicle tracker: 70mm recorder rigidly mounted to vehicle air frame (iso-stab analysis).

Test numbering system: Test categories have been established which bracket a general type of test. A consecutive numbering system combined with the test category number will permit ready reference to data. The first two digits will indicate category, the last two digits will indicate the sequence of test.

4001 Special Test Unit - Recorder and instrumentation checkout (cold test). (Estimated on time - 40 minutes)

41__ Special Test Unit - Check of PE-EK V/H system (cold test). V/H variation required during test. Possibly two or three tests required. (Estimated on time each test - 40 minutes)

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- 42___ Special Test Unit - PE Mod I V/H Test (cold test). V/H variation required. Possibly two tests. (Estimated on time each test - 40 minutes.)
- 43___ Special Test Unit - PE Mod II V/H Test (cold test). V/H required. Possibly two tests. (Estimated on time each test - 40 minutes)
- 44___ Special Test Unit - JAM V/H Test (cold test). V/H variation required. Possibly two or three tests. (Estimated on time each test - 40 minutes)
- 45___ Configuration - Focus Test. Isolator only, stabilizer caged, V/H programmed (cold test). Two tests required. (Estimated on time - 60 minutes)
- 46___ Configuration - Isolator Stabilizer Test - 70mm tracker fixed to vehicle - V/H programmed - cold test. Two tests probably required. (Estimated on time each test - 60 minutes)
- 47___ Configuration - V/H Control Test. 70mm tracker fixed to vehicle. V/H active and requires vehicle V/H variation. Stabilizer active (cold test). One test required. (Estimated on time - 60 minutes)
- 48___ Configuration - Complete Configuration Test. 70mm tracker fixed to vehicle. V/H active. Stabilizer active. Thermal curtains installed (cold test). One or two tests required. (Estimated on time - 60 minutes)
- 49___ Configuration - Complete Configuration Test (Hot test). V/H active. Stabilizer active. All thermal hardware and instrumentation included. Will probably require at least one hot through focus series. Two to four tests required. (Estimated on time - 120 minutes to attain full thermal data). Vehicle should follow mission profile as near as possible.
- 50___ Serial 50 is reserved for any special tests not designated. In event a 50 series test is originated in the field, a message defining the test will be issued by either the field crew or home facility requesting engineer.

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Notes:

1. Equipment on time is designated, rather than total vehicle time. For instance, when flying the Special Test Unit, the system will be turned on prior to take-off. Stabilizer, however, will not be active during take-off or during any maneuvers exceeding 18° roll or pitch. Configuration will be turned off during turns and normally not operated in maneuvers exceeding 13° pitch or roll.
2. An example of the above numbering system might be 4718. The designation would indicate the 18th test of the series flown specifically to evaluate configuration V/E control capability in a cold vehicle at .035 ± 18% V/E. A 70mm tracker film would also result from this test.
3. The total quantity of tests is extremely hard to define as the number is dependent on the obtaining of satisfactory data - no more testing will be performed than that necessary to obtain that data. It is also possible that some areas of investigation will require more tests than scheduled because of malfunction, inconclusive data, etc. Approximately 10 to 14 rolls of 70mm material and from 18 to 24 rolls of 8 inch will be exposed during the series.
4. The performance of the outlined test program will complete the evaluation of the Configuration Type IIA.

BLE:LB

1-22-63

cc: D.C.B.
W.R.E.
E.L.G.
R.E.G.
E.K.H.
G.A.K.
A.B.S.
D.S.E.
D.J.S.
J.T.

Don M.

BE

Type IIA - Test Program Continuation

- 25X1A
- 1.0 General: The return of the Type IIA configuration to will permit the completion of all tests necessary to satisfy the requirements of Phase I of Contract KO-136. Test schedule has been tentatively based on the availability of a hot vehicle by February 15, 1963. (Firm schedule information is at this time not available.)
 - 2.0 Special Test Unit: We have been requested to prepare the project T-28 mount and Maurer 222 70mm Camera in our possession for installation in the mission vehicle. The unit may also be used during driver training flights for ground track recording.
 - 2.1 Test Unit Description: The test unit shall be mounted in an integrated frame structure and isolated from the vehicle. Currently, it is planned that an inverter will be integrally mounted to supply necessary power. Power plugs and driver control shall be compatible with present vehicle requirements.
 - 2.1.1 Test Unit Controls: The unit shall be driver operated. Circuits necessary to perform the specific functions will be controlled by an intervalometer. The intervalometer shall be adjustable to permit a choice of lens, and also to permit a variety of frame overlap to be made. In event separate switches or controls are required for specific instrumentation, such devices will be provided for use by the driver similar to those used in the Type IIA test series.
 - 2.1.2 Instrumentation: Provision shall be made to mount a recording oscillograph and/or a magnetic tape recorder for equipment monitoring and other data recording. Fourteen channels are available for data recording on both the oscillograph and tape recorder. Recording heads may be matched to frequency response requirements on the oscillograph to optimize data recording capabilities. (The magnetic tape recorder provided for is project owned and was borrowed from Milt R. group for our previous V/E sensor test series.)
 - 2.1.3 Vehicle Mounting: The test unit will be suspended from isolators and special brackets which will tie into existing vehicle attach points.

2.1.4 Vehicle Hatch: The test unit will be positioned to operate with the Type IIA hatch and main window.

2.1.5 Test unit platform load capabilities: The test unit will be balanced and trimmed to accommodate a sensor weight of approximately 25 pounds. Total weight of the test unit is estimated to be approximately 300 pounds. Provisions will also be made to add other balancing weights as required in event other types of tests are to be performed.

3.0 Test Program: Aims of the test program continuation shall be:

- A. Evaluate the V/H systems in conjunction with Milt R. group, using the special test unit.
- B. Determine isolator-stabilizer capabilities (cold test).
- C. Tune configuration to optimized optical and mechanical performance with .035 V/H flights (cold test).
- D. Check optical degradation, if any, of the inclusion of shiny thermal panels in Type IIA configuration (cold test).
- E. Evaluate configuration control capabilities of V/H system in .035 V/H range (cold test).
- F. Thermal flights to determine configuration capabilities at mission altitude and in the .035 V/H range.

3.1 V/H Test Program: Initial testing shall be performed in the mission vehicle using the special test unit. It is planned to instrument V/H sensor and critical points in V/H electronic circuitry. Ground track material from the JAM recorder shall be used to establish true vehicle V/H. Units tested will be the EK-PE device and two modifications of the PE device. It is also planned to evaluate the EK-JAM device in the same period. (Preliminary results of a similar JAM device have yielded a laboratory drag strip accuracy capability of .15% average with a maximum error of .6% being noted during a 50% simulated ground cover run.)

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3.2 Type IIF Program: Simultaneous with the field preparation of the test unit for V/H tests, final vehicle mating the Type IIA configuration fitted with complete thermal gear will be performed. Tests 3.0, B through E, will be phased in according to vehicle availability. Adequate time will be required to reduce data and establish performance levels between each test group.

3.3 Special Targets: To accurately perform the V/H test series, a ground target is required to permit V/H vehicle determination. It is planned that final arrangements be made upon return to A suggested 25X1A ground track would be a series of automobile tires painted white and arranged at proper camera overlap distances laid out in a straight line for approximately 30 miles. Other types of marking could also be used. Spacing and number of targets will be dependent upon the vehicle altitude at which the .035 V/H is attained.

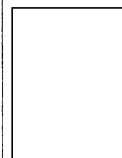
Predicted test schedule time requirements are noted in the enclosed table.

BLE:LB
1-8-63

FINAL TEST SERIES TYPE II A EQUIPMENT

25X1A

INITIAL TEST GROUP



PREDICTED
TEST SCHEDULE
CODE PC TEST
SERIES

FIRST PERIOD	SECOND PERIOD				THIRD PERIOD				FOURTH PERIOD			
1-27	2-3	2-10	2-17	2-24	3-3	3-10	3-17	3-24	3-31	4-7	4-14	4-21
EQUIP - MENT READY FOR SHIPPING	TEST AND CHECK JAM CAMERA & TEST INST. AT [] RUN OK- PE TEST INSTRUMENTATION				25X1A	SCHEDULE SHIFTS TO LEFT DEPENDENT UPON VEHICLE AVAILABILITY.						
	PE-MOD I - V/H				PE MOD II							
					JAM V/H							
	CONF. FOCUS				CONF. FOCUS							
					CONF 150-STAB							
									CONF. WITH V/H			
									CONFIG. COMPLETE			
									HOT (FOCUS)	HOT		

E. Elc 1-21-63

B. Elle 1-21-63

SCHEDULE SHIFTS TO LEFT
DEPENDENT UPON VEHICLE
AVAILABILITY.

CONF. FOCUS

CONF. FOCUS

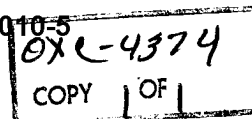
CONF.
150-57AB

CONF.
WITH 1/4H

CONFIG.
COMPLETE

HOT
(FOCUS)

HOT



January 17, 1963
#136-028

REST
F. Memo IV

Dear Jack:

We are preparing the J.A. Maurer recorder for field use per your telecon request of December 6, 1962. As discussed with you at that time, the unit is being set up to permit the evaluation of the project V/H systems. It is planned that the PE-EK unit, the JAM unit and PE MOD I and MOD II units be checked for operational capabilities.

Other devices requiring a photographic record may be tested on the platform. Provisions are also being made to operate the unit in a driver training program.

Two factors should, however, be considered. V/H evaluation will be made at a low K and low velocity. No provisions have been considered to operate the unit in a hot environment.

We are supplying enough material to complete our joint evaluation series with PE. When you have established the driver training or other test instrumentation requirements, we would be pleased to initiate the order and place the required material in supply.

If you subsequently wish to operate the unit hot, it is suggested that the thermal design be considered now.

Return to the field with all equipment looks like approximately January 29, 1963.

*ELLE WILL SEND IN SUGGESTED APPROACH
TO HOT USE OF TRACKER TELECON 1/22/63*

B. L. E.

BLE:LB

cc: W.R.E.